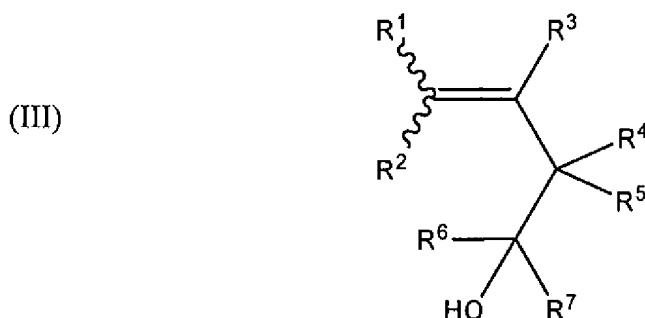


This listing of the claims replaces any and all prior versions and listings of claims in the application:

LISTING OF THE CLAIMS

1. (Withdrawn) An alkene fluoroalkanol having the structure of formula (III)



wherein:

R^1 is selected from hydrogen, C_1 - C_{24} alkyl, substituted C_1 - C_{24} alkyl, C_1 - C_{24} alkoxy, and substituted C_1 - C_{24} alkoxy;

R^2 is selected from hydrogen, C_1 - C_{24} alkyl and substituted C_1 - C_{24} alkyl;

R^3 , R^4 , and R^5 are independently selected from hydrogen, C_1 - C_{24} alkyl, and substituted C_1 - C_{24} alkyl, and further wherein any two of R^1 , R^2 , R^3 , R^4 , and R^5 may be taken together to form a ring;

R^{6A} is selected from hydrogen, C_1 - C_{24} alkyl, substituted C_1 - C_{24} alkyl, and $-(CO)-R$ in which R is hydrogen, hydroxyl, halo, C_1 - C_{24} alkyl, substituted C_1 - C_{24} alkyl, amino, C_1 - C_{24} alkylamino, or di(C_1 - C_{24} alkyl)amino; and

R^{7A} is C_1 - C_{24} alkyl or substituted C_1 - C_{24} alkyl, and further wherein R^{6A} and R^{7A} may be taken together to form a ring, with the proviso that at least one of R^{6A} and R^{7A} is fluorinated.

2. (Withdrawn) The alkene fluoroalkanol of claim 1, wherein:

R^1 is selected from hydrogen, C_1 - C_{12} alkyl, C_1 - C_{12} hydroxyalkyl, fluorinated C_1 - C_{12} alkyl, fluorinated C_3 - C_{12} hydroxyalkyl, fluorinated C_3 - C_{12} alkyl substituted with a protected hydroxyl group, and C_1 - C_{12} alkoxy;

R^2 is selected from hydrogen, C_1 - C_{12} alkyl, and substituted C_1 - C_{12} alkyl;

R^3 , R^4 , and R^5 are independently selected from hydrogen, C_1 - C_{12} alkyl, C_1 - C_{12} hydroxyalkyl, fluorinated C_1 - C_{12} alkyl, fluorinated C_1 - C_{12} hydroxyalkyl, and fluorinated C_1 - C_{12} alkyl substituted with a protected hydroxyl group, and further wherein any two of R^1 , R^2 , R^3 , R^4 , and R^5 may be taken together to form a C_3 - C_{30} alicyclic group;

R^{6A} is selected from hydrogen, C_1 - C_{12} alkyl, C_1 - C_{12} haloalkyl, and carboxyl; and

R^{7A} is C_1 - C_{12} alkyl or fluorinated C_1 - C_{12} alkyl.

3. (Withdrawn) The alkene fluoroalkanol of claim 2, wherein:

R^1 is selected from hydrogen, C_1 - C_8 alkyl, C_1 - C_8 alkoxy, and fluorinated hydroxyalkyl having the structure $-(L^1)_{n1}-CR^8R^9-OH$ in which $n1$ is zero or 1, L^1 is C_1 - C_6 aliphatic, R^8 is selected from hydrogen, C_1 - C_8 alkyl, and fluorinated C_1 - C_8 alkyl, and R^9 is fluorinated C_1 - C_8 alkyl;

R^2 is hydrogen or C_1 - C_8 alkyl;

R^3 , R^4 , and R^5 are independently selected from hydrogen, C_1 - C_8 alkyl, and fluorinated hydroxyalkyl having the structure $-(L^2)_{n2}-CR^{8A}R^{9A}-OH$ in which $n2$ is zero or 1, L^2 is C_1 - C_6 aliphatic, R^{8A} is selected from hydrogen, C_1 - C_8 alkyl, and fluorinated C_1 - C_8 alkyl, and R^{9A} is fluorinated C_1 - C_8 alkyl, and further wherein any two of R^1 , R^2 , R^3 , R^4 , and R^5 may be taken together to form a C_3 - C_{18} alicyclic group;

R^{6A} is selected from hydrogen, C_1 - C_8 alkyl, and fluorinated C_1 - C_8 alkyl; and

R^{7A} is C_1 - C_8 alkyl or fluorinated C_1 - C_8 alkyl.

4. (Withdrawn) The alkene fluoroalkanol of claim 3, wherein:

R^1 is selected from hydrogen, C_1 - C_4 alkyl, C_1 - C_4 alkoxy, and $-(L^1)_{n1}-CR^8R^9-OH$ in which $n1$ is zero or 1, L^1 is C_1 - C_4 aliphatic, R^8 is selected from hydrogen, methyl, trifluoromethyl, difluoromethyl, and fluoromethyl, and R^9 is selected from methyl, trifluoromethyl, difluoromethyl, and fluoromethyl;

R^2 is hydrogen or C_1 - C_4 alkyl;

R^3 , R^4 , and R^5 are independently selected from hydrogen, C_1 - C_4 alkyl, and $-(L^2)_{n2}-CR^{8A}R^{9A}-OH$ in which $n2$ is zero or 1, L^2 is C_1 - C_4 aliphatic, R^{8A} is selected from hydrogen, methyl, trifluoromethyl, difluoromethyl, and fluoromethyl, and R^{9A} is selected from methyl,

trifluoromethyl, difluoromethyl, and fluoromethyl, and further wherein any two of R^1 , R^2 , R^3 , R^4 , and R^5 may be taken together to form a C_3 - C_{12} alicyclic group;

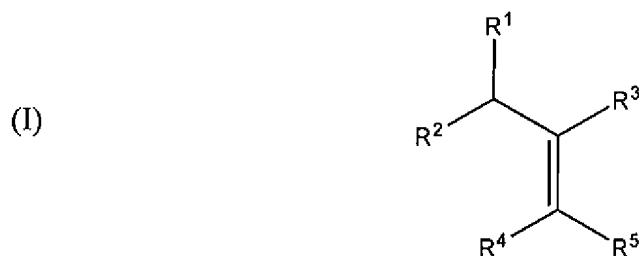
R^{6A} is selected from hydrogen, C_1 - C_4 alkyl, semi-fluorinated C_1 - C_4 alkyl, and perfluorinated C_1 - C_4 alkyl; and

R^{7A} is selected from C_1 - C_4 alkyl, semi-fluorinated C_1 - C_4 alkyl, and perfluorinated C_1 - C_4 alkyl.

5. (Withdrawn) The alkene fluoroalkanol of claim 4, wherein R^{6A} and R^{7A} are both trifluoromethyl.

6. (Withdrawn) The alkene fluoroalkanol of claim 4, wherein one of R^{6A} and R^{7A} is methyl and the other is trifluoromethyl.

7. (Currently amended) A method for synthesizing an alkene fluoroalkanol, comprising contacting (a) an olefinic reactant directly substituted on an olefinic carbon atom with a substituted or unsubstituted methyl group with (b) a fluorinated ketone, under reaction conditions and for a time period effective to allow addition of the olefinic reactant to the carbonyl carbon of the fluorinated ketone, wherein the substituted or unsubstituted methyl group is of the formula - CHR^1R^2 , such that the olefinic reactant has the structure of formula (I)



wherein:

R^1 is selected from hydrogen, C_1 - C_{24} alkyl, substituted C_1 - C_{24} alkyl, C_1 - C_{24} alkoxy, and substituted C_1 - C_{24} alkoxy;

R^2 is selected from hydrogen, C_1 - C_{24} alkyl and substituted C_1 - C_{24} alkyl;

R^3 , R^4 , and R^5 are independently selected from hydrogen, C_1 - C_{24} alkyl, and substituted C_1 - C_{24} alkyl; and further wherein any two of R^1 , R^2 , R^3 , R^4 , and R^5 may be taken together to form a ring,

and wherein the fluorinated ketone has the structure of formula (II)



wherein:

R⁶ is a fluorinated group selected from substituted C₁-C₂₄ alkyl, (fluorinated C₂-C₂₄ acyl)-substituted methyl, (fluorinated C₂-C₂₄ acyl)-substituted difluoromethyl, and -(CO)-R in which R is halo, substituted C₁-C₂₄ alkyl, C₁-C₂₄ alkylamino, or di(C₁-C₂₄ alkyl)amino; and

R⁷ is fluorinated C₁-C₂₄ alkyl, with the proviso that, when the olefinic reactant is not ~~isobutylene~~, pinene, butenyl methyl ether, isopropenyl methyl ether, *exo*-2-methylene norbornane, 5-vinyl-2-norbornene, *exo*-methylene cyclopentane, or *exo*-methylene cyclohexane, R⁶ and R⁷ are different or taken together to form a ring.

8. (Canceled).

9. (Previously presented) The method of claim 7, wherein:

R¹ is selected from hydrogen, C₁-C₁₂ alkyl, C₁-C₁₂ hydroxyalkyl, fluorinated C₁-C₁₂ alkyl, fluorinated C₁-C₁₂ hydroxyalkyl, fluorinated C₁-C₁₂ alkyl substituted with a protected hydroxyl group, and C₁-C₁₂ alkoxy;

R² is selected from hydrogen, C₁-C₁₂ alkyl, and substituted C₁-C₁₂ alkyl;

R³, R⁴, and R⁵ are independently selected from hydrogen, C₁-C₁₂ alkyl, C₁-C₁₂ hydroxyalkyl, fluorinated C₁-C₁₂ alkyl, fluorinated C₁-C₁₂ hydroxyalkyl, and fluorinated C₁-C₁₂ alkyl substituted with a protected hydroxyl group; and

further wherein any two of R¹, R², R³, R⁴, and R⁵ may be taken together to form a C₃-C₃₀ alicyclic group.

10. (Original) The method of claim 9, wherein:

R¹ is selected from hydrogen, C₁-C₈ alkyl, C₁-C₈ alkoxy, and fluorinated hydroxyalkyl having the structure -(L¹)_{n1}-CR⁸R⁹-OH in which n1 is zero or 1, L¹ is C₁-C₆ aliphatic, R⁸ is selected from hydrogen, C₁-C₈ alkyl, and fluorinated C₁-C₈ alkyl, and R⁹ is fluorinated C₁-C₈ alkyl;

R^2 is hydrogen or C_1 - C_8 alkyl;

R^3 , R^4 , and R^5 are independently selected from hydrogen, C_1 - C_8 alkyl, and fluorinated hydroxyalkyl having the structure $-(L^2)_{n2}-CR^{8A}R^{9A}-OH$ in which $n2$ is zero or 1, L^2 is C_1 - C_6 aliphatic, R^{8A} is selected from hydrogen, C_1 - C_8 alkyl, and fluorinated C_1 - C_8 alkyl, and R^{9A} is fluorinated C_1 - C_8 alkyl; and

further wherein any two of R^1 , R^2 , R^3 , R^4 , and R^5 may be taken together to form a C_3 - C_{18} alicyclic group.

11. (Original) The method of claim 10, wherein:

R^1 is selected from hydrogen, C_1 - C_4 alkyl, C_1 - C_4 alkoxy, and $-(L^1)_{n1}-CR^8R^9-OH$ in which $n1$ is zero or 1, L^1 is C_1 - C_4 aliphatic, R^8 is selected from hydrogen, methyl, trifluoromethyl, difluoromethyl, and fluoromethyl, and R^9 is selected from methyl, trifluoromethyl, difluoromethyl, and fluoromethyl;

R^2 is hydrogen or C_1 - C_4 alkyl;

R^3 , R^4 , and R^5 are independently selected from hydrogen, C_1 - C_4 alkyl, and $-(L^2)_{n2}-CR^{8A}R^{9A}-OH$ in which $n2$ is zero or 1, L^2 is C_1 - C_4 aliphatic, R^{8A} is selected from hydrogen, methyl, trifluoromethyl, difluoromethyl, and fluoromethyl, and R^{9A} is selected from methyl, trifluoromethyl, difluoromethyl, and fluoromethyl; and

further wherein any two of R^1 , R^2 , R^3 , R^4 , and R^5 may be taken together to form a C_3 - C_{12} alicyclic group.

12. (Original) The method of claim 11, wherein the olefinic reactant is selected from isobutylene, pinene, butenyl methyl ether, isopropenyl methyl ether, *exo*-2-methylene norbornane, 5-vinyl-2-norbornene, *exo*-methylene cyclopentane, and *exo*-methylene cyclohexane.

13-14 (Canceled).

15. (Previously presented) The method of claim 14, wherein R^6 is selected from substituted C_1 - C_{24} alkyl, (fluorinated C_2 - C_{24} acyl)-substituted methyl, and (fluorinated C_2 - C_{24} acyl)-substituted difluoromethyl.

16. (Previously presented) The method of claim 15, wherein:

R^6 is selected from C_1 - C_{12} haloalkyl, (fluorinated C_2 - C_{12} acyl)-substituted methyl, and (fluorinated C_2 - C_{12} acyl)-substituted difluoromethyl; and

R^7 is fluorinated C_1 - C_{12} alkyl.

17. (Previously presented) The method of claim 16, wherein:

R^6 is selected from fluorinated C_1 - C_8 alkyl, (fluorinated C_2 - C_8 acyl)-substituted methyl, and (fluorinated C_2 - C_8 acyl)-substituted difluoromethyl; and

R^7 is fluorinated C_1 - C_8 alkyl.

18. (Previously presented) The method of claim 17, wherein:

R^6 is selected from semi-fluorinated C_1 - C_4 alkyl, perfluorinated C_1 - C_4 alkyl, and R^{12} -(CO)- $CR^{10}R^{11}$ - in which R^{10} and R^{11} are H or F and R^{12} is methyl or trifluoromethyl; and

R^7 is selected from semi-fluorinated C_1 - C_4 alkyl, and perfluorinated C_1 - C_4 alkyl.

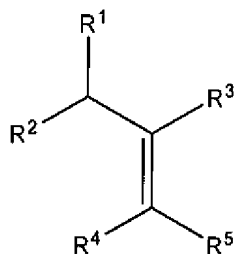
19. (Canceled).

20. (Original) The method of claim 18, wherein R^6 is R^{12} -(CO)- $CR^{10}R^{11}$.

21. (Previously presented) The method of claim 20, wherein the fluorinated ketone is hexafluoroacetylacetone.

22. (Currently amended) A method for synthesizing an alkene fluoroalkanol, comprising contacting (a) an olefinic reactant directly substituted on an olefinic carbon atom with a substituted ~~or unsubstituted~~ methyl group with (b) a fluorinated carbonyl compound under reaction conditions and for a time period effective to allow addition of the olefinic reactant to the carbonyl carbon of the fluorinated carbonyl compound, wherein the substituted ~~or unsubstituted~~ methyl group is of the formula $-CHR^1R^2$, such that the olefinic reactant has the structure of formula (I)

(I)



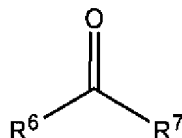
wherein:

R¹ is selected from hydrogen, C₁-C₂₄ alkyl, substituted C₁-C₂₄ alkyl, C₁-C₂₄ alkoxy, and substituted C₁-C₂₄ alkoxy;

R² is selected from hydrogen, C₁-C₂₄ alkyl and substituted C₁-C₂₄ alkyl, provided that at least one of R¹ and R² is other than hydrogen;

R³, R⁴, and R⁵ are independently selected from hydrogen, C₁-C₂₄ alkyl, and substituted C₁-C₂₄ alkyl; and further wherein any two of R¹, R², R³, R⁴, and R⁵ may be taken together to form a ring, and wherein the fluorinated carbonyl compound has the structure of formula (II)

(II)



wherein:

R⁶ is a fluorinated group selected from substituted C₁-C₂₄ alkyl, (fluorinated C₂-C₂₄ acyl)-substituted methyl, (fluorinated C₂-C₂₄ acyl)-substituted difluoromethyl, and -(CO)-R in which R is halo, substituted C₁-C₂₄ alkyl, C₁-C₂₄ alkylamino, or di(C₁-C₂₄ alkyl)amino; and

R⁷ is fluorinated C₁-C₂₄ alkyl,

with the proviso that the fluorinated carbonyl compound is other than hexafluoroacetone.

23. (Previously presented) The method of claim 22, wherein any two of R¹, R², R³, R⁴, and R⁵ may be taken together to form an alicyclic group.

24. (Original) The method of claim 23, wherein:

R¹ is selected from hydrogen, C₁-C₁₂ alkyl, C₁-C₁₂ hydroxyalkyl, fluorinated C₁-C₁₂ alkyl, fluorinated C₁-C₁₂ hydroxyalkyl, fluorinated C₁-C₁₂ alkyl substituted with a protected hydroxyl group, and C₁-C₁₂ alkoxy;

R² is selected from hydrogen, C₁-C₁₂ alkyl, and substituted C₁-C₁₂ alkyl;

R^3 , R^4 , and R^5 are independently selected from hydrogen, C_1 - C_{12} alkyl, C_1 - C_{12} hydroxyalkyl, fluorinated C_1 - C_{12} alkyl, fluorinated C_1 - C_{12} hydroxyalkyl, and fluorinated C_1 - C_{12} alkyl substituted with a protected hydroxyl group; and

further wherein any two of R^1 , R^2 , R^3 , R^4 , and R^5 may be taken together to form a C_3 - C_{30} alicyclic group.

25. (Original) The method of claim 24, wherein:

R^1 is selected from hydrogen, C_1 - C_8 alkyl, C_1 - C_8 alkoxy, and fluorinated hydroxyalkyl having the structure $-(L^1)_{n1}-CR^8R^9-OH$ in which $n1$ is zero or 1, L^1 is C_1 - C_6 aliphatic, R^8 is selected from hydrogen, C_1 - C_8 alkyl, and fluorinated C_1 - C_8 alkyl, and R^9 is fluorinated C_1 - C_8 alkyl;

R^2 is hydrogen or C_1 - C_8 alkyl;

R^3 , R^4 , and R^5 are independently selected from hydrogen, C_1 - C_8 alkyl, and fluorinated hydroxyalkyl having the structure $-(L^2)_{n2}-CR^{8A}R^{9A}-OH$ in which $n2$ is zero or 1, L^2 is C_1 - C_6 aliphatic, R^{8A} is selected from hydrogen, C_1 - C_8 alkyl, and fluorinated C_1 - C_8 alkyl, and R^{9A} is fluorinated C_1 - C_8 alkyl; and

further wherein any two of R^1 , R^2 , R^3 , R^4 , and R^5 may be taken together to form a C_3 - C_{18} alicyclic group.

26. (Original) The method of claim 25, wherein:

R^1 is selected from hydrogen, C_1 - C_4 alkyl, C_1 - C_4 alkoxy, and $-(L^1)_{n1}-CR^8R^9-OH$ in which $n1$ is zero or 1, L^1 is C_1 - C_4 aliphatic, R^8 is selected from hydrogen, methyl, trifluoromethyl, difluoromethyl, and fluoromethyl, and R^9 is selected from methyl, trifluoromethyl, difluoromethyl, and fluoromethyl;

R^2 is hydrogen or C_1 - C_4 alkyl;

R^3 , R^4 , and R^5 are independently selected from hydrogen, C_1 - C_4 alkyl, and $-(L^2)_{n2}-CR^{8A}R^{9A}-OH$ in which $n2$ is zero or 1, L^2 is C_1 - C_4 aliphatic, R^{8A} is selected from hydrogen, methyl, trifluoromethyl, difluoromethyl, and fluoromethyl, and R^{9A} is selected from methyl, trifluoromethyl, difluoromethyl, and fluoromethyl; and

further wherein any two of R^1 , R^2 , R^3 , R^4 , and R^5 may be taken together to form a C_3 - C_{12} alicyclic group.

27. (Original) The method of claim 26, wherein the olefinic reactant is selected from isobutylene, pinene, butenyl methyl ether, isopropenyl methyl ether, exo-2-methylene norbornane, 5-vinyl-2-norbornene, exo-methylene cyclopentane, and exo-methylene cyclohexane.

28. (Canceled).

29. (Canceled).

30. (Previously presented) The method of claim 22, wherein R^6 is selected from substituted C_1 - C_{24} alkyl, (fluorinated C_2 - C_{24} acyl)-substituted methyl, and (fluorinated C_2 - C_{24} acyl)-substituted difluoromethyl.

31. (Previously presented) The method of claim 30, wherein :

R^6 is selected from C_1 - C_{12} haloalkyl, (fluorinated C_2 - C_{12} acyl)-substituted methyl, and (fluorinated C_2 - C_{12} acyl)-substituted difluoromethyl; and

R^7 is fluorinated C_1 - C_{12} alkyl.

32. (Previously presented) The method of claim 31, wherein:

R^6 is selected from fluorinated C_1 - C_8 alkyl, (fluorinated C_2 - C_8 acyl)-substituted methyl, and (fluorinated C_2 - C_8 acyl)-substituted difluoromethyl; and

R^7 is fluorinated C_1 - C_8 alkyl.

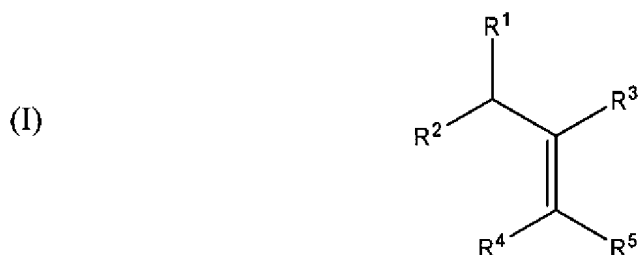
33. (Previously presented) The method of claim 32, wherein:

R^6 is selected from semi-fluorinated C_1 - C_4 alkyl, perfluorinated C_1 - C_4 alkyl, and R^{12} -(CO)- $CR^{10}R^{11}$ - in which R^{10} and R^{11} are H or F and R^{12} is methyl or trifluoromethyl; and

R^7 is selected from semi-fluorinated C_1 - C_4 alkyl, and perfluorinated C_1 - C_4 alkyl.

34. (New) A method for synthesizing an alkene fluoroalkanol, comprising contacting (a) an olefinic reactant directly substituted on an olefinic carbon atom with a substituted or

unsubstituted methyl group with (b) a fluorinated carbonyl compound under reaction conditions and for a time period effective to allow addition of the olefinic reactant to the carbonyl carbon of the fluorinated carbonyl compound, wherein the substituted or unsubstituted methyl group is of the formula $\text{-CHR}^1\text{R}^2$, such that the olefinic reactant has the structure of formula (I)



wherein:

R^1 is selected from hydrogen, $\text{C}_1\text{-C}_{24}$ alkyl, substituted $\text{C}_1\text{-C}_{24}$ alkyl, $\text{C}_1\text{-C}_{24}$ alkoxy, and substituted $\text{C}_1\text{-C}_{24}$ alkoxy;

R^2 is selected from hydrogen, $\text{C}_1\text{-C}_{24}$ alkyl and substituted $\text{C}_1\text{-C}_{24}$ alkyl;

R^3 , R^4 , and R^5 are independently selected from hydrogen, $\text{C}_1\text{-C}_{24}$ alkyl, and substituted $\text{C}_1\text{-C}_{24}$ alkyl; and further wherein any two of R^1 , R^2 , R^3 , R^4 , and R^5 may be taken together to form a ring, and wherein the fluorinated carbonyl compound has the structure of formula (II)



wherein:

R^6 is a fluorinated group selected from substituted $\text{C}_1\text{-C}_{24}$ alkyl, (fluorinated $\text{C}_2\text{-C}_{24}$ acyl)-substituted methyl, (fluorinated $\text{C}_2\text{-C}_{24}$ acyl)-substituted difluoromethyl, and -(CO)-R in which R is halo, substituted $\text{C}_1\text{-C}_{24}$ alkyl, $\text{C}_1\text{-C}_{24}$ alkylamino, or $\text{di(C}_1\text{-C}_{24}\text{ alkyl)amino}$; and

R^7 is fluorinated $\text{C}_1\text{-C}_{24}$ alkyl,

with the proviso that R^6 and R^7 are not the same group such that the fluorinated carbonyl compound is asymmetric.

35. (New) The method of claim 34, wherein:

R^1 is selected from hydrogen, $\text{C}_1\text{-C}_8$ alkyl, $\text{C}_1\text{-C}_8$ alkoxy, and fluorinated hydroxyalkyl having the structure $\text{-(L}^1\text{)}_{n1}\text{-CR}^8\text{R}^9\text{-OH}$ in which $n1$ is zero or 1, L^1 is $\text{C}_1\text{-C}_6$ aliphatic, R^8 is

selected from hydrogen, C₁-C₈ alkyl, and fluorinated C₁-C₈ alkyl, and R⁹ is fluorinated C₁-C₈ alkyl;

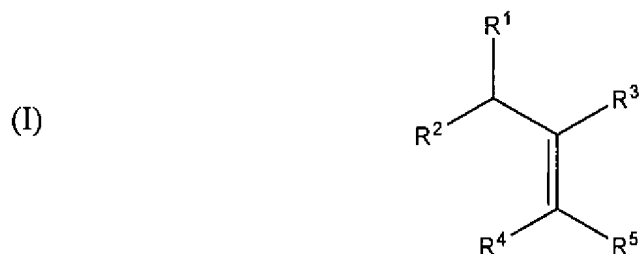
R² is hydrogen or C₁-C₈ alkyl;

R³, R⁴, and R⁵ are independently selected from hydrogen, C₁-C₈ alkyl, and fluorinated hydroxyalkyl having the structure -(L²)_{n2}-CR^{8A}R^{9A}-OH in which n2 is zero or 1, L² is C₁-C₆ aliphatic, R^{8A} is selected from hydrogen, C₁-C₈ alkyl, and fluorinated C₁-C₈ alkyl, and R^{9A} is fluorinated C₁-C₈ alkyl; and

further wherein any two of R¹, R², R³, R⁴, and R⁵ may be taken together to form a C₃-C₁₈ alicyclic group.

36. (New) The method of claim 34, wherein the olefinic reactant is selected from isobutylene, pinene, butenyl methyl ether, isopropenyl methyl ether, exo-2-methylene norbornane, 5-vinyl-2-norbornene, exo-methylene cyclopentane, and exo-methylene cyclohexane.

37. (New) A method for synthesizing an alkene fluoroalkanol, comprising contacting (a) an olefinic reactant directly substituted on an olefinic carbon atom with a substituted or unsubstituted methyl group with (b) a fluorinated carbonyl compound under reaction conditions and for a time period effective to allow addition of the olefinic reactant to the carbonyl carbon of the fluorinated carbonyl compound, wherein the substituted or unsubstituted methyl group is of the formula -CHR¹R², such that the olefinic reactant has the structure of formula (I)



wherein:

R¹ is selected from hydrogen, C₁-C₂₄ alkyl, substituted C₁-C₂₄ alkyl, C₁-C₂₄ alkoxy, and substituted C₁-C₂₄ alkoxy;

R² is selected from hydrogen, C₁-C₂₄ alkyl and substituted C₁-C₂₄ alkyl;

R^3 , R^4 , and R^5 are independently selected from hydrogen, C_1 - C_{24} alkyl, and substituted C_1 - C_{24} alkyl; and further wherein any two of R^1 , R^2 , R^3 , R^4 , and R^5 may be taken together to form a ring, and wherein the fluorinated carbonyl compound has the structure of formula (II)



wherein:

R^6 is a fluorinated group selected from substituted C_1 - C_{24} alkyl, (fluorinated C_2 - C_{24} acyl)-substituted methyl, (fluorinated C_2 - C_{24} acyl)-substituted difluoromethyl, and $-(CO)-R$ in which R is halo, substituted C_1 - C_{24} alkyl, C_1 - C_{24} alkylamino, or di(C_1 - C_{24} alkyl)amino; and

R^7 is fluorinated C_1 - C_{24} alkyl,

with the proviso that R^6 and R^7 are taken together to form a cycle.

38. (New) The method of claim 37, wherein:

R^1 is selected from hydrogen, C_1 - C_8 alkyl, C_1 - C_8 alkoxy, and fluorinated hydroxyalkyl having the structure $-(L^1)_{n1}-CR^8R^9-OH$ in which $n1$ is zero or 1, L^1 is C_1 - C_6 aliphatic, R^8 is selected from hydrogen, C_1 - C_8 alkyl, and fluorinated C_1 - C_8 alkyl, and R^9 is fluorinated C_1 - C_8 alkyl;

R^2 is hydrogen or C_1 - C_8 alkyl;

R^3 , R^4 , and R^5 are independently selected from hydrogen, C_1 - C_8 alkyl, and fluorinated hydroxyalkyl having the structure $-(L^2)_{n2}-CR^{8A}R^{9A}-OH$ in which $n2$ is zero or 1, L^2 is C_1 - C_6 aliphatic, R^{8A} is selected from hydrogen, C_1 - C_8 alkyl, and fluorinated C_1 - C_8 alkyl, and R^{9A} is fluorinated C_1 - C_8 alkyl; and

further wherein any two of R^1 , R^2 , R^3 , R^4 , and R^5 may be taken together to form a C_3 - C_{18} alicyclic group.

39. (New) The method of claim 37, wherein the olefinic reactant is selected from isobutylene, pinene, butenyl methyl ether, isopropenyl methyl ether, exo-2-methylene norbornane, 5-vinyl-2-norbornene, exo-methylene cyclopentane, and exo-methylene cyclohexane.